

the Union Pacific Railroad.

Development History:

grade, to an interchange with T.H. 169.

- 1st Draft Layout Created (12-28-11)

- 2nd Draft Layout (12-29-11)

- 3rd Draft Layout (1-4-12)

- 4th Draft Layout (1-6-12)

P.C. of the inplace curve

and minimum K value of 124

the north side of TH 19 only

o Showing 1:3 inslopes

Project Index Map:

West of the project limits, the highway crosses a raised embankment over the river floodplain, ultimately crossing the river and entering the town of

East of the project limits, the highway climbs out of the river valley at a 5%

Layout development began with the minimum approach necessary to replace

approach required several design exceptions and subsequent iterations aimed

while still staying within the scope of a bridge replacement project.

Minimum K value 115 for T.H. 19 profile

the inplace bridge and meet vertical clearance over the railroad. This minimum

to strike a context-sensitive design approach that addressed design deficiencies,

o 5.3% Max Grade on T.H. 19, 9% on Henderson Station Road

10' Shoulders shown across bridge and to the east

1:2.5 inslopes shown to address erosion concerns

o Henderson Station Road (North) realigned about 200' north to open

o Henderson Station Road (North) alignment adjusted back to present alignment to avoid embankment fills and 4(f) impacts to county park

Project limits extended on west end of job to allow 10' shoulders to the

o With extended project limits, profile flattened to allow 5% max grades

o Easternmost P.C. moved 100' east to flatten 2 eastern vertical curves,

o Centerline of TH 19 shifted north to allow for embankment widening on

minimum K value increased to 211 to further improve sight distance. Henderson Station Road North max grade flattened from 9 to 8%

TH 19 profile changes required lengthening the project 150'

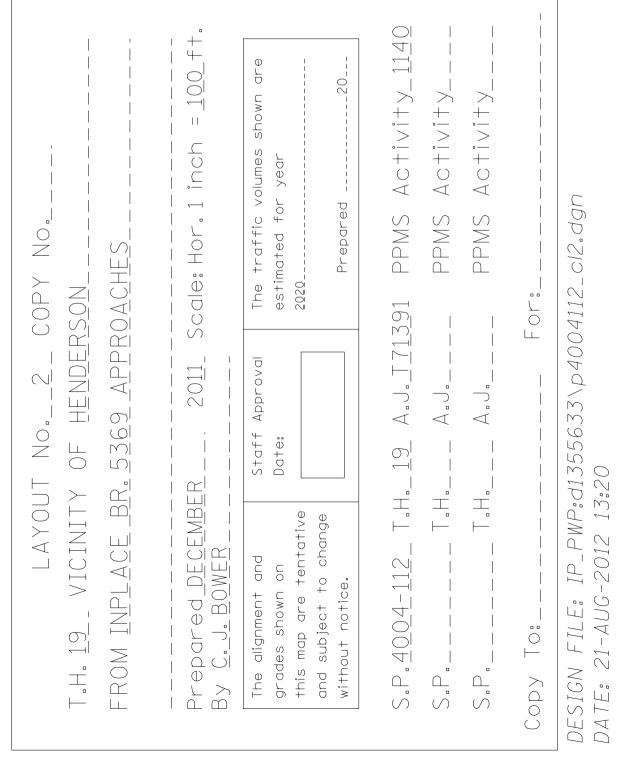
TH 19 profile adjusted upward, bridge length increased

Layout 2 created 3-10-12 - Included major revisions to accomodate future 2nd RR track

o Radius of TH 19 curve flattened from 955' R to 980' R; 161' spiral

o County Road 34 and Township Road 2 adjusted as necessary

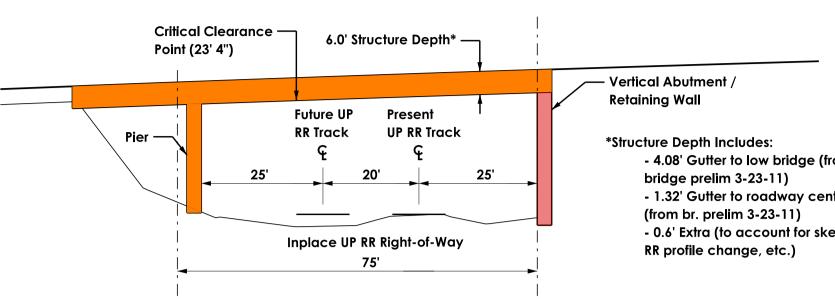
10' Shoulders shown to west of bridge to open up sight distance



S.P. 4004-112 - T.H. 19 Bridge 5369 Layout History (for color layout): Replacement over Union Pacitic Railroad S.P. 4004-112 is located on TH 19 in the Minnesota River Valley east of Henderson, and consists of the replacement of bridge number 5369 over

Typical Section On Bridge

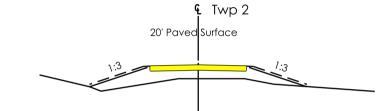
Typical Section Under Bridge



- 4.08' Gutter to low bridge (from - 1.32' Gutter to roadway centerline - 0.6' Extra (to account for skew

Typical TH 19 Narrow Shoulder Section

Typical Section On Twp. Rd. 2 (Henderson Station Road)



Typical Section On Co. Rd. 34 (Henderson Station Road)

Typical TH 19 Embankment Section

Legend:

Paved Roadway

Gravel Roadway

Paved Shoulders

Construction Limits

Proposed R/W Acquisition

Bridge Deck

Preliminary Draft - 3-10-12

Subject to Change Without Notice

Township Road 2 (Henderson Station Road) Profile

